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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,686	12/02/2003	Joseph M. Jacobson	056754/0120889	3403
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NORMA F HENDERSON HENDERSON PATENT LAW 13 JEFFERSON DR LONDONDERRY, NH 03053			EXAMINER ZIMMERMAN, TOSHUA D	
			ART UNIT 2854	PAPER NUMBER
			MAIL DATE 02/23/2011	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/725,686

**Applicant(s)**

JACOBSON ET AL.

**Examiner**

JOSHUA D. ZIMMERMAN

**Art Unit**

2854

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 November 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 5-7, 10-13 and 16-26 is/are pending in the application.
- 4a) Of the above claim(s) 10 and 16-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-7, 11-13 and 23-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No.(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicants' election with traverse of the election requirement in the reply filed on 10/27/10 is acknowledged. The traversal is on the ground(s) that the limitations are not mutually exclusive. This is found persuasive. Therefore, the requirement is hereby WITHDRAWN.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5-7, 11-13 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 2003/0017424) in view of Johnson (US 2003/0095170).

Regarding claim 5, Park et al. teach "a method for contact printing, comprising the steps of:

applying a thin film of material to a substrate (paragraph 23);

creating a pattern in the thin film of material by bringing a flexible stamp into contact with the substrate (figure 4), but the steps of:

bowing the stamp in a controlled manner (paragraph 27);

moving the bowed stamp toward the second surface at a predetermined rate until the first surface contacts the second surface at a single point of contact (paragraph 27. Examiner notes that in order to bring the two surfaces into contact, a rate must be predetermined, and therefore is inherent); and

continuing to move the bowed first surface toward the second surface, under controlled pressure (the 'down arrows' in Figure 4; paragraph 27, lines 5-6; paragraph 25, lines 7-13), by the step of pushing air ahead of a moving contact line between the first and second surface (paragraph 27, lines 5-9. By virtue of the arrangement shown in Figure 4, and since bubbles are not allowed to form, therefore, inherently, air must be pushed ahead of a moving contact line) until the single point of contact expands to a circle of desired radius (paragraph 27)."

Park et al. fail to teach "modifying the patterned film by one or more of the steps of:

- removing material from the patterned film using a sharp tip;
- adding material to the patterned film using a sharp tip;
- removing material from the patterned film by addition of a solvent;
- removing material from the patterned film using electromagnetic radiation; and
- curing material in the patterned film to prevent its transfer."

However, Chou teaches removing imprint material via etching with a solvent in order to expose the underlying substrate for further processing (paragraph 29). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to remove material from the patterned film via etching with a

solvent in order to expose the underlying substrate for further processing.

Park et al. also fail to teach that the substrate is an offset substrate and that the modified patterned film is transferred "to a final substrate by bringing the offset substrate into contact with the final substrate."

Johnson teaches a method of transferring a pattern to a final substrate by using an intermediate transfer member (abstract) in order to decrease the amount of fluid transferred to the final substrate (abstract). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to modify the method of Park et al. by including a transfer member in order to reduce the amount of fluid transferred to the final substrate.

4. Regarding claim 6, Park et al. as modified teach all that is claimed, including the addition of a release agent in order to facilitate removal of the mold (paragraph 24). However, Park et al. as modified fail to specifically mention the values of the contact angles of the surfaces in question. However, one having ordinary skill in the art would recognize that utilizing surfaces with different contact angles will facilitate pattern transfer and would have been motivated to modify Park et al. such that "the stamp has a contact angle lower than the contact angle of the offset substrate and the final substrate has a contact angle lower than the contact angle of the offset substrate" in order to facilitate the pattern transfer process.

Regarding claim 7, Johnson further teaches "the step of bringing the offset substrate into contact with a second final substrate to transfer any remaining material to the second final substrate (paragraph 32. The step of cleaning meets this limitation)."

Regarding claim 11, Park et al. as modified teach all that is claimed, but fail to specifically teach “further comprising the step of reversing the patterned film by transferring the patterned film to a second offset substrate before transferring it to the final offset substrate by bringing the offset substrate into contact with the second offset substrate.” However, since Johnson teaches the use of an intermediate substrate in order to transfer a pattern whereby less material is ultimately transferred, one having ordinary skill in the art would have been motivated to include a further intermediate substrate in order to transfer even less material to the final substrate.

Regarding claim 12, Park et al. as modified further teach “further comprising the step of heating the material before or while applying it to the offset substrate (paragraph 29).”

Regarding claim 13, Park et al. as modified further teach “further comprising the step of heating the patterned film before or during the step of transferring (paragraph 29).”

Regarding claim 24, Park et al. teach “further comprising the step of aligning the stamp and the offset substrates using an alignment mechanism (paragraphs 38-39).”

Regarding claim 25, Park et al. further teach “wherein the alignment mechanism includes an optical alignment component (paragraphs 38 and 39; examiner interprets the alignment structures to be said optical alignment component at least for the fact that they can be seen) and the stamp is optically clear (paragraph 19: PDMS is clear).”

Regarding claim 26, Park et al., as modified, teach all that is claimed, as in claim 5 above, but fail to teach that “the step of modifying the patterned film comprising the

step of curing material in the patterned film using a laser.”

However, it is well-known that to prevent a material from being moved or removed from a substrate, especially in imprinting methods, the material can be cured via UV radiation in order to fix it to the substrate. See, for example, paragraph 5 of Park et al. It has been established in the combination with Johnson (see the rejection of claim 5 above) that it is desirable to use an offset principle. Thus, when modifying the method of Park et al. to incorporate the offset principle, one having ordinary skill in the art, via common sense, would recognize that fixing the unwanted imprint material to the intermediate substrate would be an equivalent means for preventing unwanted imprint material from being present on the final substrate. Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to use UV radiation to cure and fix the unwanted imprint material on the intermediate substrate because it is an equivalent means for preventing unwanted imprint material from being present on the final substrate.

5. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. and Johnson, as applied to claim 5 above, further in view of Kendale et al. (US 2003/0213382).

Regarding claim 23, Park et al. teach all that is claimed, as in claim 5 above, including that any conventional method may be used to slightly bow the imprint surface (penultimate sentence of paragraph 27); however, Park et al., as modified, fail to specifically teach that the flexible surface is bowed “by application of a controlled air pressure difference between the two sides of the first surface.”

However, Kendale et al. teach that, at the time of the invention, it was conventional to bend a microcontact printing stamp before contacting the stamp with the target surface by using a user-controlled pressure difference between the top and bottom surfaces of the stamp (paragraph 7).

Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to use the conventional method disclosed by Kendale et al. in the modified method of Park et al. in order to bend the flexible surface because Park et al. teach using any conventional method.

### ***Response to Arguments***

6. Applicants' arguments filed 1/21/10 have been fully considered but they are moot in view of the new grounds of rejection.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any



Art Unit: 2854

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSHUA D. ZIMMERMAN whose telephone number is (571)272-2749. The examiner can normally be reached on Monday-Friday, 9:30A-6:00P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joshua D Zimmerman  
Examiner  
Art Unit 2854

/Joshua D Zimmerman/  
Primary Examiner, Art Unit 2854